

that developed between the coast and Bermuda and caused strong gales to hurricane winds over all the western Atlantic from the Bahamas to Sable Island, between the 25th and 29th.

Notwithstanding the violence and extent of the storm conditions at the opening and towards the close of the month no major ship casualty was reported to have occurred in these periods. Several lives were lost, however, as individual seamen were swept overboard by waves, and many ships suffered delay and minor damage to gear and superstructures.

The only major casualty to shipping, so far as known, came on January 20th, when the British S. S. *Exeter City* was abandoned in sinking condition about 650 miles east of Cape Race. The American S. S. *American Merchant*, under command of Capt. Giles Stedman, was able to rescue the remaining 22 members of the crew of the sink-

ing ship, but Captain Legg of the *Exeter City*, and three of his crew had previously been swept away by the seas, which smashed bridge and boats, and stove in the hatches.

This storm, while undoubtedly very intense near its center, was comparatively small in extent, and moved rapidly from the Grand Banks northeastward between the 18th and 20th without causing widespread storm winds.

Fog.—The main trans-Atlantic routes were remarkably free from fog during January, with not more than two days of fog reported in any 5-degree square, and none in most of the area. For the second successive month, however, fog was more than usually prevalent on the north coast of the Gulf of Mexico where it was reported on 11 days in January and on as many as 5 days in a single locality.

OCEAN GALES AND STORMS, JANUARY, 1933

Vessel	Voyage		Position at time of lowest barometer		Gale began	Time of lowest barometer	Gale ended	Lowest barometer	Direction of wind when gale began	Direction and force of wind at time of lowest barometer	Direction of wind when gale ended	Direction and highest force of wind	Shifts of wind near time of lowest barometer
	From—	To—	Latitude	Longitude									
NORTH ATLANTIC OCEAN													
Bonneville, Nor. M. S.—	Charleston	Bremen	39° 55' N	63° 41' W	Dec. 31	28, Jan 1	Jan. 1	Inches	SW	SSW, 9	NNW	N, 10	SSW-W-N.
Bremen, Ger. S. S.—	New York	Cherbourg	46° 54' N	37° 04' W	Jan. 1	Noon, 1	Jan. 2	28.74	WNW	WNW, 11	W	WNW, 12	
New York, Ger. S. S.—	New York	Cherbourg	45° 38' N	37° 57' W	do	4p, 1	Jan. 3	28.92	SW	W, 7	SW	W, 12	Steady.
Leviathan, Am. S. S.—	do	Savannah	41° 11' N	33° 57' W	do	5p, 1	Jan. 4	29.70	WSW	WSW, 11	NNW	W, 12	
Knoxville City, Am. S. S.—	Port Said	Savannah	35° 35' N	7° 10' W	do	10p, 1	Jan. 5	30.12	SW	SW, —	NW	SW, 8	SW-NW.
Jean Jadot, Belg. S. S.—	Antwerp	New York	50° 05' N	24° 52' W	do	11p, 1	Jan. 6	28.54	S	SW, 10	NNW	WNW, 11	SW-W-WNW.
Lepanto, Br. S. S.—	Aberdeen	Halifax	54° 08' N	31° 50' W	Dec. 31	6a, 2	Jan. 2	27.43	NNW	NW, 12	NW	W, 12	W-NW.
American Importer, Am. S. S.—	Cherbourg	New York	49° 48' N	16° 18' W	Jan. 1	9a, 2	Jan. 3	28.68	SW	SW, 7	W	W, 12	SW-S-W
Daytonian, Br. S. S.—	Liverpool	Boston	55° 12' N	11° 54' W	do	do	Jan. 5	28.10	S	W, 7	WNW	W, 10	S-W-SW.
Duchess of Atholl, Br. S. S.—	Halifax	Boston	53° 38' N	26° 46' W	do	10a, 2	Jan. 4	27.94	SSW	SSW, 7	WSW	WSW, 12	S-WNW-W.
Capulin, Am. S. S.—	Dundee	Boston	58° 46' N	8° 30' W	do	2p, 2	do	28.25	S	S, 7	W	S, 12	S-WSW.
Cameronia, Br. S. S.—	Glasgow	New York	54° 42' N	20° 36' W	do	4p, 2	do	27.93	SW	SW, 10	NNW	SW, 10	Slight.
Gonzenheim, Ger. S. S.—	Antwerp	Lake Charles	46° 54' N	9° 27' W	Jan. 4	7p, 4	Jan. 5	29.82	SW	SW, 9	SW	SW, 9	WSW-W-NW.
Steel Navigator, Am. S. S.—	Port Said	Boston	38° 48' N	61° 34' W	do	Noon, 5	do	29.67	SW	W, 10	WNW	WNW, 10	
Capulin, Am. S. S.—	Dundee	New York	58° 20' N	18° 50' W	do	4p, 5	Jan. 7	29.10	WSW	SW, 8	W	SW, 9	WSW-SW.
American Importer, Am. S. S.—	Cherbourg	New York	47° 12' N	37° 19' W	Jan. 4	3a, 6	Jan. 6	29.22	W	SSW, 10	W	W, 12	W-SSW-W.
Katendrecht, Du. M. S.—	Rouen	Philadelphia	49° 09' N	24° 16' W	Jan. 6	1a, 7	Jan. 7	29.83	S	SSW, 9	WSW	SSW, 10	SSW-WSW.
Excalibur, Am. S. S.—	New York	Gibraltar	36° 08' N	55° 44' W	Jan. 7	7a, 7	do	28.88	SSW	SSW, 8	NE	NNW, 9	SSW-NNW.
McKeepsport, Am. S. S.—	Rouen	do	41° 08' N	62° 15' W	do	10p, 7	Jan. 8	29.54	SW	SW, 9	WNW	SW, 9	SW-W.
Capulin, Am. S. S.—	Dundee	Boston	56° 30' N	28° 50' W	Jan. 8	9p, 8	Jan. 9	29.97	WSW	WSW, 7	S, 10	WSW-SSW.	
Champlain, Fr. S. S.—	Plymouth	New York	46° 10' N	41° 20' W	do	10p, 8	do	29.70	SSW	—	WSW	SSW, 9	S-WSW.
Wildwood, Am. S. S.—	Savannah	London	36° 24' N	72° 41' W	Jan. 9	8p, 9	Jan. 10	29.66	WSW	W, 7	NNW	SW, 9	SW-W-NW.
Excalibur, Am. S. S.—	Gibraltar	New York	37° 48' N	66° 45' W	do	2a, 10	do	29.53	SSE	WNW, —	NW	WNW, 10	SSW-WNW.
Lenanto, Br. S. S.—	Aberdeen	Halifax	44° 52' N	55° 56' W	Jan. 10	8a, 10	do	29.21	SE	SSE, 9	W	SSE, 9	SSE-S-W.
Daytonian, Br. S. S.—	Liverpool	Boston	48° 02' N	44° 51' W	do	9p, 10	Jan. 11	29.08	SSW	—	NW	SW, 9	SSW-W-NW.
Hoxie, Am. S. S.—	Leith	New York	54° 17' N	34° 26' W	do	7a, 11	Jan. 14	28.94	S	SSW, 9	NW	WSW, 11	SSE-W.
Black Tern, Am. S. S.—	Rotterdam	New York	49° 55' N	30° 02' W	Jan. 11	1p, 11	Jan. 12	29.77	SSW	S, 10	WSW	S, 10	S-W-WNW.
Black Tern, Am. S. S.—	Brussels	New York	28° 13' N	89° 15' W	Jan. 12	8a, 12	Jan. 13	29.98	NNE	—	NNE	NNE, 9	NE-ENE.
Black Tern, Am. S. S.—	Rotterdam	New York	47° 14' N	40° 37' W	do	Noon, 13	Jan. 14	29.89	W	SSW, 10	NW	SSW, 10	S-SW-W.
Maja, Du. M. S.—	Curacao	Baltimore	36° 01' N	72° 10' W	do	Mdt, 13	do	29.84	N	ENE, 9	NE	NNE, 9	ENE-E-ENE.
Scanpenn, Am. S. S.—	Hoyanger	Wilmington	60° 41' N	6° 15' W	Jan. 13	Noon, 14	do	29.96	SW	SW, 8	WSW	SSW, 9	SSW-W-WSW.
Exeter, Am. S. S.—	Gibraltar	Boston	39° 07' N	15° 40' W	Jan. 16	4a, 17	Jan. 17	29.53	SSW	WSW, 8	N	W, 8	SSW-W-NW.
Hoxie, Am. S. S.—	Leith	Baltimore	44° 47' N	60° 41' W	Jan. 18	Noon, 18	Jan. 19	29.44	N	N, 8	N	N, 9	Steady.
Stuttgart, Ger. S. S.—	Galway	New York	47° 12' N	46° 06' W	Jan. 19	2p, 19	Jan. 20	28.65	NE	N, 11	NW	NNW, 11	N-NNW-NW.
Scanpenn, Am. S. S.—	Hoyanger	Wilmington	53° 35' N	38° 05' W	do	28, 20	Jan. 20	28.54	SE	NW, 6	NW	NNW, 9	SE-SW-NW.
Exeter, Am. S. S.—	Gibraltar	Boston	42° 45' N	43° 10' W	Jan. 21	5p, 21	Jan. 22	29.20	S	W, 10	NW	W, 10	S-WNW-W.
John D. Archbold, Am. S. S.—	Corporation	New York	36° 30' N	74° 04' W	Jan. 25	Noon, 25	Jan. 26	29.11	SE	SSE, 9	N	N, 9	SW-N.
Waukegan, Am. S. S.—	Havre	Christi	45° 15' N	41° 07' W	do	10p, 25	do	29.16	S	N, 7	NW	N, 10	S-N.
Kinai Maru, Jap. S. S.—	Baltimore	do	37° 00' N	75° 44' W	Jan. 26	4a, 26	do	28.97	NW	W, 8	NNE	N, 10	
Patrick Henry, Am. S. S.—	Cristobal	Baltimore	29° 40' N	75° 00' W	Jan. 25	do	do	29.68	SW	W, 8	NW	W, 9	W-WNW.
China Arrow, Am. S. S.—	Boston	Beaumont	34° 32' N	72° 56' W	do	do	Jan. 28	29.08	SE	W, 8	NW	WNW, 12	
Shickshinny, Am. S. S.—	Jacksonville	Liverpool	46° 45' N	38° 40' W	do	do	Jan. 27	29.00	S	SSE, 9	SE	SSE, 9	SSE-SE.
Statendam, Du. S. S.—	New York	Kingston	39° 27' N	73° 53' W	do	6a, 26	do	29.27	NNE	NNE, 9	NNE	NNE, 11	Slight.
Cold Harbor, Am. S. S.—	Dundee	Boston	49° 30' N	47° 00' W	Jan. 26	9a, 26	Jan. 27	29.26	NNE	NNE, 8	NNW	N, 9	N-NNW.
City of Elwood, Am. M. S.—	New York	Cristobal	34° 55' N	74° 00' W	do	2p, 27	Jan. 28	29.09	N	W, 11	NW	W, 11	ESE-S-WNW.
Borenquin, Am. S. S.—	San Juan	do	33° 15' N	71° 05' W	Jan. 27	8p, 27	Jan. 29	28.98	S	SW, 10	NW	W, 12	S-SW-W.
Coamo, Am. S. S.—	San Juan	New York	21° 00' N	67° 00' W	do	11p, 27	Jan. 30	29.62	W	W, 7	NNW	NW, 9	W-WNW.
President Roosevelt, Am. S. S.—	Cobh	do	42° 00' N	61° 00' W	do	Mdt, 27	Jan. 29	29.64	ESE	ESE, 8	N	E, 10	
Nebraskan, Am. S. S.—	New York	Cristobal	29° 07' N	71° 19' W	do	4a, 28	Jan. 28	29.44	SSW	W, 9	W	W, 9	WSW-W-WNW.
Berlin, Ger. S. S.—	Southampton	New York	40° 58' N	66° 56' W	do	Noon, 28	Jan. 29	28.65	ESE	NNE, 8	NW	E, 11	NE-N.
Boschdijk, Du. S. S.—	Boston	Boston	43° 16' N	62° 32' W	do	4p, 28	do	28.59	E	NE, 9	NNE	NE, 9	Slight.

¹ Lowest pressure beyond range of instrument; needle stuck 4 hours at 27.94 inches.

OCEAN GALES AND STORMS, JANUARY, 1933—Continued

Vessel	Voyage		Position at time of lowest barometer		Gale began	Time of lowest barometer	Gale ended	Lowest barometer	Direction of wind when gale began	Direction and force of wind at time of lowest barometer	Direction of wind when gale ended	Direction and highest force of wind	Shifts of wind near time of lowest barometer	
	From—	To—	Latitude	Longitude										
NORTH PACIFIC OCEAN														
Tai Yang, Nor. M. S.	Yokohama	San Francisco	36° 45' N	153° 20' W	Dec. 31	Noon, 31	Jan. 1	29.30	Inches	NE	NNE, 11	NW	NNE, 11	NE-N.
Delftdijk, Du. M. S.	Balboa	Los Angeles	14° 41' N	95° 16' W	do	—, 1	do	29.30	WNW	N, 9	NE	N, 9	SSW-SW.	
Fernmoor, Nor. M. S.	Vancouver	Shanghai	51° 46' N	138° 04' W	do	8 a., 3	Jan. 5	29.28	SW	SSW, 8	W	SW, 10	N-NN.	
Kiyo Maru, Jap. S. S.	Yokohama	San Pedro	39° 06' N	156° 40' E	Jan. 1	4 a., 4	do	29.54	ESE	W, 7	NNE	N, 9	N-NN.	
Golden Peak, Am. S. S.	Otaru	San Francisco	41° 33' N	143° 35' E	Jan. 2	4 p., 2	Jan. 4	29.91	N	N, 8	NNE	N, 9	N-NN.	
Salawati, Du. M. S.	Manila	do	42° 45' N	154° 06' E	do	Noon, 3	do	29.54	SE	NE, 8	NE	NE, 9	SE-NE.	
Emp. of Russia, Br. S. S.	Vancouver	Yokohama	51° 41' N	169° 38' W	do	4 p., 3	Jan. 6	28.80	SW	NE, 9	NE	NE, 10	E-NE-NNE.	
Varanger, Du. M. S.	Yokohama	San Francisco	35° 59' N	159° 49' E	Jan. 4	6 a., 4	Jan. 4	29.72	WNW	WNW, S	NW	NW, 9	WNW-WW.	
Tai Yang, Nor. M. S.	do	do	44° 10' N	168° 11' W	Jan. 6	6 a., 6	Jan. 6	29.18	W	WSW, 9	SW	WSW, 10	Steady.	
Tatsuno Maru, Jap. S. S.	do	do	39° 25' N	162° 40' E	Jan. 7	2 a., 8	Jan. 8	29.17	ESE	ENE, 10	N	ENE, 10	E-ENE-NE.	
Fernhill, Nor. M. S.	Manila	San Pedro	38° 08' N	162° 15' W	Jan. 8	4 a., 9	Jan. 9	29.61	SSE	SSE, 9	SSW	SSE, 10	SSE-S-SW.	
Varanger, Du. M. S.	Yokohama	San Francisco	36° 45' N	176° 50' W	do	6 p. S.	do	29.06	SW	SW	W	WSW, 10	SW-WSW-W.	
Kiyo Maru, Jap. S. S.	do	San Pedro	40° 10' N	175° 21' E	do	6 p. 8	Jan. 10	29.00	ESE	NE, 10	W	SW, 10	E-NE-NNE.	
Pres. Taft, Am. S. S.	Victoria	Yokohama	50° 31' N	132° 46' W	do	8 p., 8	Jan. 11	29.21	SE	SSW, 9	W	SW, 10	SW-SSW-W.	
Fernmoor, Nor. M. S.	Vancouver	Shanghai	52° 00' N	171° 35' W	Jan. 9	1 p., 9	Jan. 10	29.51	NE	NNE	NW	NNE, 10	Steady.	
Salawati, Du. M. S.	Manila	San Francisco	41° 55' N	179° 50' W	Jan. 8	2 p., 8	Jan. 12	29.00	E	NE, 10	W	NE, 10	NE-N.	
Kedoe, Du. M. S.	Ternate	Los Angeles	28° 00' N	170° 00' E	Jan. 10	2 a., 12	Jan. 13	29.66	NW	NW, 12	NE	NW, 12	NE-NNE.	
Nairnbank, Br. M. S.	San Pedro	Yokohama	29° 07' N	178° 09' E	Jan. 12	6 p., 12	do	29.90	N	NE, 8	NE	NNE, 9	NE-NN.	
Pres. Taft, Am. S. S.	Victoria	do	51° 00' N	177° 00' W	do	2 p., 14	Jan. 14	29.62	WSW	S, 9	WSW	S, 10	SW-S-SSE.	
Golden Tide, Am. S. S.	Hong Kong	San Francisco	46° 58' N	175° 00' E	Jan. 13	7 a., 14	do	29.26	E	SW, 8	SW	SW, 9	Steady.	
Maul, Am. S. S.	Honolulu	do	33° 10' N	131° 00' W	Jan. 15	4 a., 16	Jan. 16	29.94	NNW	N	NNW	N, 8	NNW-N.	
Kuraha Maru, Jap. M. S.	Los Angeles	Yokohama	46° 60' N	175° 08' W	Jan. 16	do	do	W, 11						
Fernbank, Nor. M. S.	Cebu	San Pedro	35° 12' N	177° 41' E	do	2 p., 16	Jan. 17	29.65	S	S, 8	NNW	SSE, 9	SSE-NNW.	
Ogura Maru, Jap. M. S.	Yokohama	do	36° 30' N	145° 15' E	Jan. 17	4 a., 18	Jan. 18	29.53	S	SW, 10	NW	SW, 10	S-SW-W.	
Fernmoor, Nor. M. S.	Vancouver	Shanghai	44° 38' N	148° 55' E	do	3 p., 18	Jan. 19	28.80	SSE	Var.	WNW	E, 11	E-SW.	
Mericos H. Whittier, Am. S. S.	Honolulu	San Francisco	34° 50' N	131° 35' W	Jan. 18	6 a., 19	Jan. 20	29.74	NW	NW, 9	N	NW, 9	NW-N.	
Pres. Madison, Am. S. S.	Yokohama	Victoria	47° 22' N	170° 21' E	Jan. 19	1 p., 19	do	29.80	SSE	S, 8	SW	S, 9	SSE-S.	
Stanley Dollar, Am. S. S.	Philippines	Los Angeles	34° 20' N	164° 39' E	Jan. 20	6 a., 20	do	29.98	N	N, 9	NNE	N, 9	SW-N-NNE.	
Everett, Am. S. S.	Tacoma	Long. 150° W.	56° 48' N	*146° 42' W	Jan. 22	4 a., 23	Jan. 24	29.06	WSW	WNW, 7	W	WNW, 11		
Do	Long. 150° W.	Tacoma	50° 38' N	*148° 00' W	Jan. 25	4 p., 25	Jan. 28	29.11	WSW	W, 11	NW	W, 11	Steady.	
Admiral Peoples, Am. S. S.	Portland	San Pedro	45° 38' N	124° 16' W	Jan. 22	2 p., 22	Jan. 26	29.41	SSW	SSE, 7	SW	SSE, 9		
Wisconsin, Am. S. S.	Japan	San Francisco	47° 00' N	153° 35' W	Jan. 25	8 a., 25	do	29.86	W	W, 7	NW	NW, 10	W-NW.	
San Pedro Maru, Jap. M. S.	Yokohama	do	36° 48' N	154° 58' E	Jan. 24	6 a., 28	Jan. 28	29.17	NE	W, 4	NNE	NNW, 11	WSW-W.	
Tacoma, Am. S. S.	Taku Bar	Seattle	50° 00' N	163° 30' W	Jan. 30	3 a., 31	Jan. 31	29.00	E	E, 7	SE	--, 10	Calm-E.	
SOUTH PACIFIC OCEAN														
Maunganui, Br. S. S.	Rarotonga	Wellington	22° 17' S	160° 52' W	Jan. 3	12.30 a., 4	Jan. 4	28.62	N	NW, 11	S	SSW, 12	N-NW-SW.	
Niagara, Br. S. S.	Sydney	Honolulu	27° 30' S	176° 34' E	Jan. 11	Noon, 11	Jan. 12	28.86	ESE	NW, 9	W	NW, 12	N-NW-W.	

* Position approximate.

NORTH PACIFIC OCEAN, JANUARY, 1933

By WILLIS E. HURD

Atmospheric pressure.—The average center of the Aleutian cyclone shifted somewhat farther eastward than usual during January, 1933. It lay over the Gulf of Alaska, with pressure lower at Juneau, 29.57 inches, than at Kodiak, 29.60 inches, which is very unusual, as the normal pressure at Juneau is .30 inch higher than that at

TABLE 1.—Averages, departures, and extremes of atmospheric pressure at sea level, North Pacific Ocean, January, 1933, at selected stations

Stations	Average pressure	Departure from normal	Highest	Date	Lowest	Date
Point Barrow	Inches	Inch	Inches	Inches		
Dutch Harbor	29.93	-0.15	30.38	1	29.40	21
St. Paul	20.71	+1.13	30.28	21	28.96	6
Koksiak	29.72	+.09	30.18	17	28.66	24
Juneau	29.60	+.01	30.50	14	29.02	25
Tatoosh Island	29.57	-32	30.61	15	28.93	23
San Francisco	29.80	-18	30.63	11	29.09	24
Mazatlan	30.05	-0.06	30.39	12	29.54	19
Honolulu	29.94	-0.08	30.00	2, 11	29.86	29
Midway Island	29.98	-0.05	30.24	15	29.72	11
Guan	29.90	.00	29.98	6, 11, 16	29.80	25
Manila	29.92	-.06	30.02	2, 3	29.82	19, 20, 21, 22
Nana	30.19	+.11	30.38	13, 14	29.96	20
Chichishima	30.09	+.08	30.30	9	29.88	23
Nemuro	30.02	-----	30.40	5	29.34	17

Note.—Data based on 1 daily observation only, except those for Juneau, Tatoosh Island, San Francisco, and Honolulu, which are based on 2 observations. Departures are computed from best available normals related to time of observation.

Kodiak. Over the Aleutian Islands pressures were higher than normal, but along most of the American coast east of longitude 150° W., they were below the average for the month.

The eastern Pacific anticyclone remained for most of the month between California and the Hawaiian Islands. High pressure lay off the central Asiatic coast, with average barometric readings about a tenth of an inch above normal over the North China Sea and as far eastward as the Ogasawara Islands.

Cyclones and gales.—Gales of force 8 or higher were reported as encountered in some part of the North Pacific Ocean on every day of the month except the 29th, and on 7 or 8 days forces of 11 or 12 were experienced in localities. The greater part of these gales occurred north of the thirtieth parallel. Such continental cyclones as entered the sea area from Asia were apparently weak depressions at the outset, and acquired energy only as they crossed the warm current of the Kuroshio. Hence the gales were mainly associated with cyclones of oceanic origin or development. An example of this is the cyclone of January 16-22 which showed little development until the 18th, east of Yezo and the Kuril Islands, when it suddenly attained great depth and swept the whole western end of the northern steamship routes with fierce gales, diminishing on the 19th, as the storm moved across Bering Sea on its way to the Arctic Ocean.

The middle-latitude storm of the 5th to 11th originated at sea southeast of Japan. During the first six days it